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The Influence of Trait Mindfulness on Psychological Resilience of College Students: The Mediating Role of Intentional Self-regulation

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Abstract: **Objective:** This study intends to investigate the moderating role of intentional self-regulation in the relationship between trait mindfulness and psychological resilience. **Methods:** A total of 260 college students were recruited in the study and were assessed by using the Mindful Attention Awareness Scale(MAAS), Connor-Davidson Resilience Scale(CD-RISC) and the Intentional Self-regulation Test. **Results:** (1) The scores of MAAS, CD-RISC and the Intentional Self-regulation Test were 65.391±12.896, 70.048±13.202 and 38.315±3.430, respectively; (2) Trait mindfulness was positively associated with psychological resilience (r=0.652, *P*<0.001), and intentional self-regulation was positively related to trait mindfulness(r=0.561, *P*<0.001) and psychological resilience(r=0.721, P<0.001), respectively; (3) Intentional self-regulation plays a partial moderating role between trait mindfulness and psychological resilience. **Conclusion:** Trait mindfulness not only has a direct effect on psychological resilience among college students, but also indirectly influences intentional self-regulation by the mediating effect of psychological resilience.

Keywords: Trait mindfulness; Psychological resilience; Intentional self-regulation; Mediation

1. Introduction

Resilience, or psychological resilience, is the ability for individuals to effectively adapt to stressful events and adverse situations[1]. It is a crucial part of psychological capital and has a significant impact on mental health[2]. Psychological resilience is closely linked to personality traits, self-control, coping style, parenting style, family function, and social support[3-8]. College students are at a crucial stage in their lives, transitioning from school to society. The COVID-19 epidemic has brought about significant challenges for them, impacting their physical and psychological well-being, as well as their studies and future employment. However, college students' psychological function is not fully mature, and their psychological resilience is insufficient. When faced with pressure and frustration, they are prone to various psychological problems due to their inability to adjust, which can even lead to behavioral issues that impact their future growth and development. Studies have shown that psychological resilience can weaken the negative impact of negative life events on depressive symptoms, and play a role in protecting individual mental health[9]. Therefore, it is of great significance to study the influencing factors of psychological resilience which can not only provide educational guidance and suggestions for the improvement of psychological resilience of college students, but also promote the development of mental health theories.

Mindfulness is a novel concept in contemporary clinical health psychology, originating from the "Meditation" in Eastern meditation culture. Currently, there is no universally accepted definition of mindfulness. Researchers consider it to be a mental state, mental process, and mental trait as well as a method. However, regardless of the conceptual orientation, the common emphasis is on four elements: attention, present moment awareness, non-judgmental attitude, and acceptance. A s a method, mindfulness training has been proven to improve individual sleep, mood, and procrastination behavior[10-12]. Additionally, mindfulness can be enhanced through training as a mental state or trait[13-14]. It serves as a protective factor for mental health and effectively improves happiness[15-16]. An analysis of PTSD related to the COVID-19 outbreak revealed that individuals with high levels of mindfulness demonstrate greater emotional resilience, lower scores on various indicators of PTSD, and reduced fear of COVID-19[17]. Therefore, this study propose hypothesis H1: Trait mindfulness positively predicts psychological resilience.

Intentional self-regulation (ISR) is a crucial aspect of self-regulation, encompassing a series of deliberate actions in which individuals select strategies based on their own capabilities and actively coordinate various resources to exercise self-control while pursuing their goals. Relevant studies have indicated that intentional self-regulation is closely associated with an individual's psychological capital[18], which in turn can enhance

happiness and reduce the likelihood of engaging in negative behaviors[19-22]. During the process of intentional self-regulation, individuals have the opportunity to accumulate valuable experiences, which in turn can foster the development of positive psychological qualities such as self-confidence, competitiveness, and compassion. This can ultimately play a significant role in promoting the healthy development of adolescents. According to the function model of psychological resilience, individuals achieve self-regulation goals through the interaction of internal protective factors such as personality traits and external protective factors such as social support, in order to attain psychological recovery. Hence, this study propose hypothesis H2: Intentional self-regulation may mediate the relationship between trait mindfulness and psychological resilience.

2. Method

2.1 Participants and procedures

This study collected questionnaire data from 263 Chinese college students through the online platform "Credamo". All participants volunteered to take part in the study after signing informed consent forms. After excluding data from participants who failed to pass all four attention tests, 248 valid questionnaires were obtained, resulting in an effective rate of 94.297%, including 86 male students and 162 female students. In general, liberal arts students (39.919%), juniors (37.500%), city students (50.000%), students from modest families (79.435%), and students with peaceful family relationships (72.581%) accounted for a larger proportion of the sample population.

2.2 Measures

2.2.1 Mindful Attention Awareness Scale (MAAS)

Trait mindfulness was measured by the MAAS, translated and revised by Chen et al.[23]. It was a single-dimensional structured scale with 15 items and rated on a 6-point Likert scale("1" = "almost always", "6" ="almost never"). The higher the score, the higher the level of trait mindfulness. The internal consistency coefficient of the scale is 0.890, and the retest reliability is 0.870. The internal consistency coefficient of the scale was 0.924 in this study.

2.2.2 Psychological Resilience Scale (CD-RISC)

The Chinese version of the Psychological Resilience Scale for college students was revised by Yu and Zhang[24]. It comprises 25 items, rated on a 5-point Likert scale ("0"= "never", "4"= "always"), and includes three subscales: tenacity, strength, and optimism. The scores of the scale range from 0 to 100, with higher scores indicating better psychological resilience. The internal consistency coefficient of the scale is 0.890, and the retest reliability is 0.870. In this study, the internal consistency coefficient of the scale was found to be 0.926.

2.2.3 Intentional Self-regulation Questionnaire

The Intentional Self-regulation Questionnaire was developed based on the Selective Optimization with Compensation (SOC) theory. The Chinese version, revised by Dai et al. [25], was utilized in this study. It comprises 9 items rated on a 5-point Likert scale ("1" = "very inconsistent", "6" ="very consistent"), reflecting individuals' behaviors towards goal achievement over the past six months. A higher score indicates better intentional self-regulation ability. The internal consistency coefficient of the scale was found to be 0.870, while in this study it was 0.726.

2.3 Data analysis

Analyses were conducted using SPSS 27.0 and PROCESS plug-in.

3. Results

3.1 Testing common method biases

The Harman single factor test was utilized to examine common method biases in trait mindfulness, psychological resilience, and intentional self-regulation. The results revealed the extraction of a total of 9 eigenvalues exceeding 1, with the first factor accounting for 34.736% of the variance. This percentage fell below the critical value of 40%, indicating the absence of significant common method bias in this study.

3.2 Analysis of correlations

The results of the correlation analysis indicate a significant positive correlation between trait mindfulness and psychological resilience. Additionally, both trait mindfulness and psychological resilience showed a significant positive correlation with intentional self-regulation, as reported in Table 1, supporting hypothesis H1.

Table 1 Descriptive statistics and correlation analysis of variables (*N*=248)

Variables	M±SD	1	2	3
1. Trait Mindfulness	65.391±12.896	1		
2. Intentional self-regulation	38.315± 3.430	0.561***	1	
3. Psychological Resilience	70.048±13.202	0.652***	0.721***	1

*** $P<0.001$

3.3 Testing mediating model

The study employed the PROCESS V4.1 plug-in of SPSS 27.0 to analyze the mediating effect of intentional self-regulation, following Model 4 (Table 2), while controlling for relevant confounding factors (gender, grade, major, household registration, family income). The results of stepwise regression analysis were shown in Table 2. In the first step, trait mindfulness significantly and positively predicted psychological resilience(β=0.528, P<0.001); in the second step, trait mindfulness had a significant positive predictive effect on intentional self-regulation (β=0.495, P<0.001); in the third step, when trait mindfulness and intentional self-regulation co-predicted psychological resilience, the regression coefficient of trait mindfulness on psychological resilience changed and became statistically significant(β=0.290, P<0.001). This indicates that the mediating role of intentional self-regulation in the model was established.

Furthermore, bootstrap analysis revealed that the association between trait mindfulness and psychological resilience was mediated by intentional self-regulation. As shown in Table 3, the direct effect was 0.290 (95%CI: 0.193 ~ 0.401) and the indirect effect was 0.238 (95%CI: 0.172 ~ 0.3309). The direct effect accounted for 54.924% of the total effect, while the indirect effect accounted for 45.076%. The mediation model is illustrated in Figure 1.

Table 2 Test results of the mediating effect by PROCESS stepwise regression (N=248)

Outcome variables	Predictor variables	R	R^2	F	β	t
Psychological Resilience	Trait Mindfulness	0.704	0.495	33.664	0.528	9.664***
Intentional self-regulation	Trait Mindfulness	0.593	0.352	18.604	0.495	7.988***
Psychological Resilience	Trait Mindfulness	0.803	0.645	54.358	0.290	5.618***
	Intentional self-regulation				0.481	1.851***

*** P<0.001

Table 3 Bootstrap estimation results for mediating effect of the model (N=248)

Effect	Effect size	BootSE	Bootstrap 95%CI		Percentage of relative effect
			Lower limit	Upper limit	
Total Effect	0.528	0.056	0.431	0.651	
Direct effect	0.290	0.053	0.193	0.401	54.924%
Indirect effect	0.238	0.035	0.172	0.309	45.076%

*** P<0.001

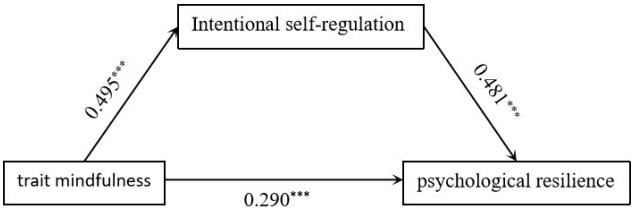

Figure 1 Mediating effect model of trait mindfulness on psychological resilience

*** P<0.001

4. Discussion

4.1 The relationship between trait mindfulness and psychological resilience

Consistent with previous findings[26-28], this study found a significant positive correlation between trait mindfulness and psychological resilience. The key characteristics of high mindfulness include attention (awareness), a focus on present moment, non-judgment, and acceptance. On the one hand, individuals with high levels of mindfulness demonstrated a greater ability to refrain from immediate reactions to stressful events and adversities. This capacity contributed to the enhancement of their psychological resilience[26]. The ability to withhold immediate reactions reflected the "present moment" and "non-judgment" characteristics commonly associated with highly mindful individuals. On the other hand, when faced with negative stress, highly mindful individuals were able to concentrate more on the present moment, refrain from engaging in negative self-evaluation, and exhibit greater self-acceptance. As a result, they were better equipped to make rational cognitive assessments and thereby strengthen their psychological resilience[27].

4.2 The partial mediating role of intentional self-regulation

The indirect model indicated that intentional self-regulation played a partial mediating role between between trait mindfulness and psychological resilience. Intentional self-regulation, as mentioned above, refers to the strategic actions taken by individuals based on the various

resources available in their environment. Hence, this result can be attributed to the fact that individuals with higher levels of mindfulness were better able to pay thorough attention to themselves and their surroundings in the present moment. Consequently, they were able to effectively identify various resources in their environment[29]. And the characteristic of non-judgment and acceptance further enhanced their self-control behaviors[30].Higher levels of intentional self-regulation allowed individuals to select more rational strategies for dealing with stressful situations, thus effectively enhancing psychological resilience[31].Meanwhile, the accumulated experience in coping with pressure has been beneficial for cultivating positive psychological qualities such as self-efficacy. This, in turn, contributes to the enhancement of psychological resilience[32].

4.3 Limitations

However, several limitations should be taken into account. Firstly, it is important to note that this study is a cross-sectional study and therefore unable to establish a causal relationship. Secondly, all variables were measured using self-report scales or questionnaires, indicating the necessity for experimental design in order to further ensure the correlations. Thirdly, based on the statistical results, there are still some effects that cannot be accounted for solely through the mediating effect of intentional self-regulation. Therefore, it is necessary to further explore and establish a new model in the later stages of research.

5. Conclusion

(1) Trait mindfulness, psychological resilience, and intentional self-regulation were found to have positive correlations; (2) Intentional self-regulation was identified as playing a partial mediating role between trait mindfulness and psychological resilience.

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